DATE: NAME: CLASS:

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| **TOPICS 3-5** | Topics 3-5 Test | **BLM 4-21** |
| ASSESSMENT |  |

# Goal • Assess your understanding of terms and concepts from Topics 3, 4, and 5.

# What to Do

Carefully read the instructions for each set of questions.

**Fill in the Blanks**

Choose the best term from the list to complete each of the sentences below.

mass external force deformation tension weight

shear bend compression internal force stress

1. Putting a compression force on a thin material will \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ it.
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is an indication that the materials in a structure are being   
   stressed.
3. Hammering results in an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ acting on a piece of furniture and an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ acting on the joints and materials.
4. A newton is a measurement of a structure’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
5. A piece of steel may \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ when it is weakened by metal fatigue.

# Short Answers

Answer the following questions in the space provided.

1. Rewrite the following sentences to correct any mistakes.  
   (a) After four weeks of following Canada’s Food Guide, Sasha’s weight decreased by 3 kg.

(b) Sheila got on a bathroom scale and recorded the reading as 42 kg. She then calculated her

mass as 378 N.

(c) Mass on Earth stays basically the same no matter where your are, but it changes

dramatically in outer space.

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| **TOPICS 3-5** | Topics 3-5 Test (continued) | **BLM 4-21** |
| ASSESSMENT |  |

1. Identify one type of stress (shear, bending, torsion, tension, or compression) that occurs in each situation below:  
   (a) bungee jumping   
   (b) twisting a towel   
   (c) bursting bubbles   
   (d) making footprints in sand   
   (e) a road buckling   
   (f) squishing a marshmallow   
   (g) kicking a football   
   (h) an avalanche

**True or false:**

8. The mass of a structure would be the same on the Moon as it is on Earth.

A) True

B) False

9. A person's weight is really a measure of the gravitational force between that person and Earth.

A) True

B) False

10. In a force diagram, the length of the arrows shows the size of the force.

A) True

B) False

11. A bird sitting on the windowsill of your house is an example of a dead load.

A) True

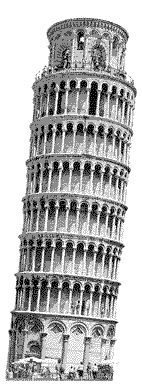
B) False

12. If you kick a large building, the force of your kick has an effect on that building.

A) True

B) False

13. Shear forces can make the soil under a heavy building shift sideways, causing the building to topple or lean.



A) True

B) False

14. In order for a structure to "fail" it must collapse completely.

A) True

###### B) False

15. Metal fatigue occurs when the forces holding particles of material together are weakened because of regular movement.

A) True

###### B) False

1. Name three forces that can cause material failure.

1. How can you prevent thin sheets from bending or buckling?